

# *Ceratostylis radiata* (Orchidaceae) - A new record to Indian flora

N. Odyuo, Dilip Kr. Roy, Chaya Deori\* and Ranjit Daimary

Botanical Survey of India, Eastern Regional Centre, Shillong-793 003, Meghalaya, India.

\*E-mail: drchayadeoribsi@gmail.com

## Abstract

*Ceratostylis radiata* J.J. Sm., an orchid species collected for the first time from Assam forms an addition to the orchid flora of India. A brief description with illustrated photographs is provided for easy identification.

**Keywords:** Assam, *Ceratostylis radiata*, India, New record, Orchidaceae

## Introduction

*Ceratostylis* Blume established in 1825 comprises about 100 species distributed from India and South-east Asia to Indonesia and New Guinea (Pearce & Cribb, 2002). The genus now comprises of three species in India as previously only two species was reported from India viz., *Ceratostylis subulata* Blume, *C. himalaica* Hook.f.

On a field tour collection during the month of September, 2011 from Kakoi Reserve Forest, North Lakhimpur district, Assam, an orchid species with elongated leaves in vegetative condition was collected along with other angiospermic plants and introduced in the Botanical Garden, Botanical Survey of India, Shillong. In the month of September 2012, the species bloomed and with critical study it was identified as *Ceratostylis radiata* J. J. Sm. Subsequently, the identity was confirmed in consultation with relevant literature (Seidenfaden, 1986; Comber, 1990) and type material at Kew herbarium. A thorough scrutiny of literature (Chowdhery, 1998, 2009; Hajra & De, 2011; Misra, 2007; Rao, 2009; Singh *et al.*, 2001) revealed that this species was hitherto unrecorded from India. Hence, it is reported here as a new record to orchid flora of India. The addition of this rare and interesting species *C. radiata* to India is worth reporting from phytogeographical point of view and for its *in situ* and *ex situ* conservation.

The paper provides brief description, key to the species, illustrated photographs and image of the type specimen to facilitate easy identification of this species in the field.

## Key to Indian species of *Ceratostylis*

1. Stems suberect; lip spatulate or 3-lobed ..... 2

1. Stems pendant; lip suboblong or cymbiform ..... **C. himalaica**

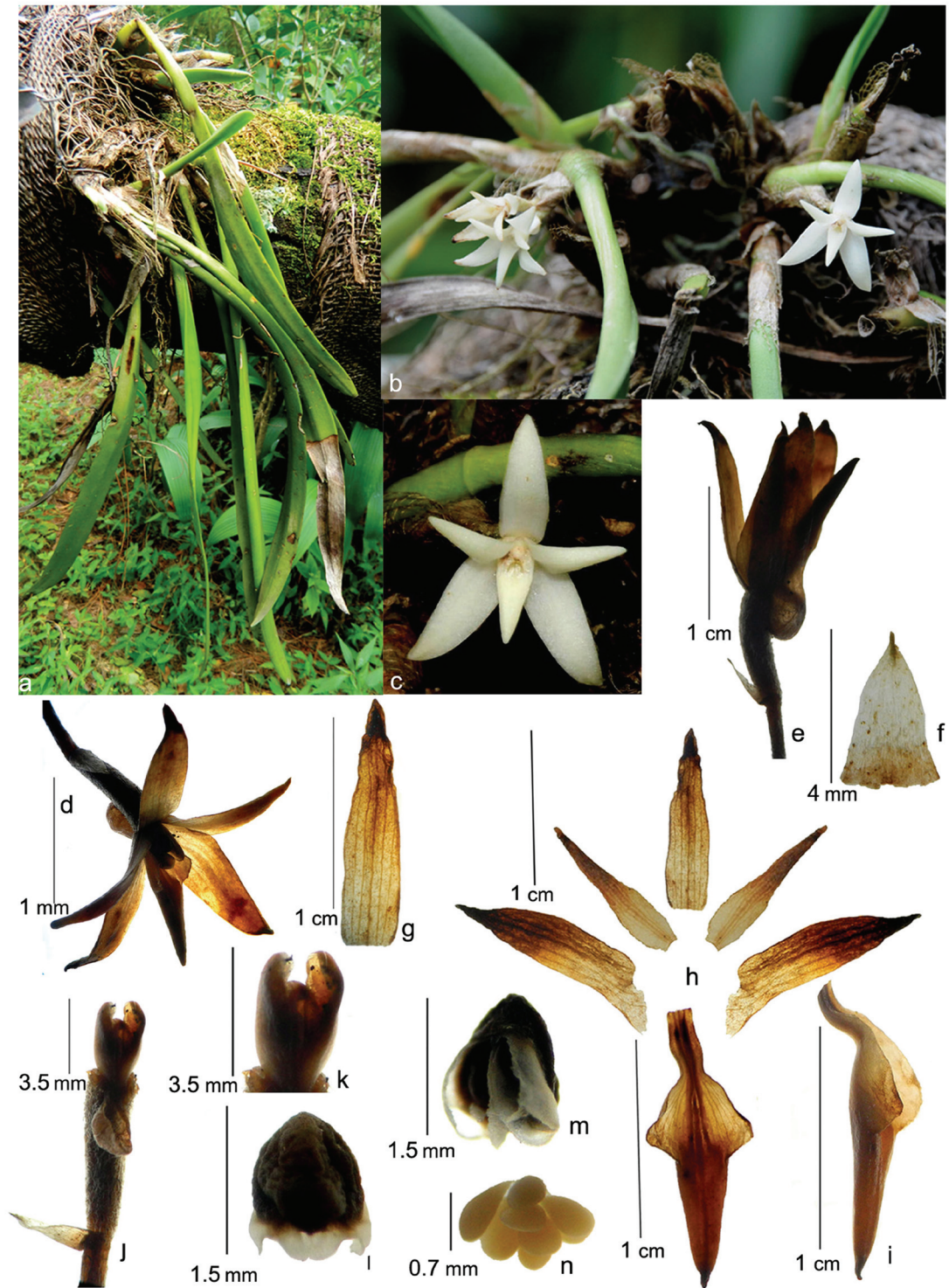
2. Stems naked, sheathed at base only; flowers yellow; lip spatulate ..... **C. subulata**

2. Stems covered by sheaths; flowers white; lip 3-lobed ..... **C. radiata**

***Ceratostylis radiata*** J.J. Sm., Fl. Buitenz. 6: 295. Fig. 225, 1905; Schechter, Beilb. Bot. Jahrb. 104. 45(3): 21. 1911; J.J. Sm., Fed. Repert. 32: 213. 1933; Baker & Bakhuizen, Fl. Java 310. 1968; Seidenf., Bot. Tidsskr. 65(1-2): 132. 1969, Op. Bot. 89: 115. 1986; *Ceratostylis linearifolia* Ridl., Fl. Malay Pen. 4: 110. 1924; Holttum, Orchids of Malaya, Fl. Malaya 495. 1957.

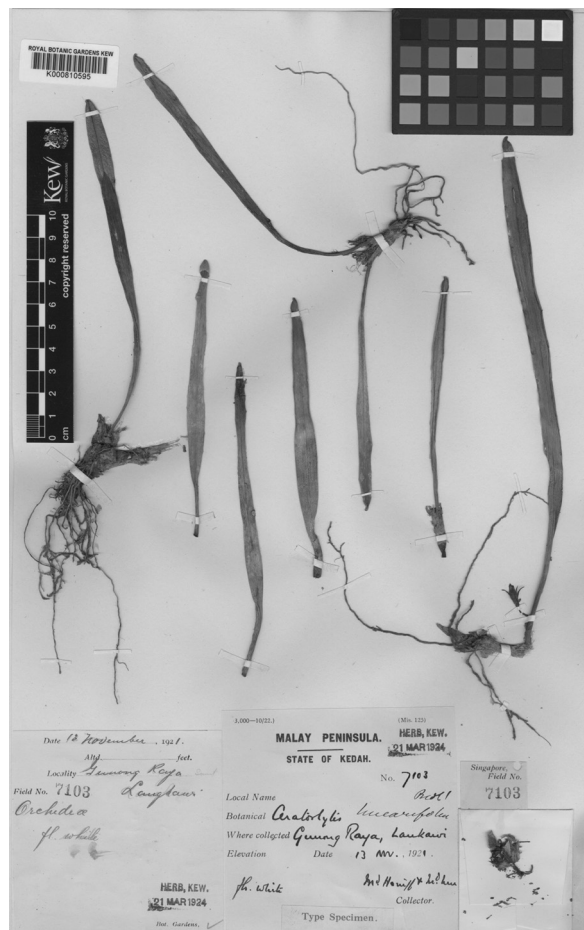
**Fig. 1**

Herb, epiphytic; roots 1 mm in across, hairy, branched; rhizome up to 10 cm long, sometimes very short, much branched, covered with bracts which quickly decay leaving a reticulate net of veins enveloping the stem; stems about 2 cm apart, very short. Leaves elongated, linear-lanceolate, acute 15–25 × 1 mm, thick and fleshy. Floral bract c. 4 × 2–2.3 mm, broadly lanceolate, acuminate, gland-dotted. Pedicel and ovary 7.5 mm long, densely hirsute. Flowers opening widely, almost star-shaped, 14–15 mm long; sepals and petals and lip pure white, gradually narrowed to an acute apex. Sepals hairy on the outer surface; mentum rounded; dorsal sepal 7–12 × 3–3.5 mm, lanceolate, acute, 5-nerved; laterals 14–15 × 3–3.5 mm, lanceolate, acute, broader at base, longer than petals, 5-nerved; Petals c. 11 × 2.5 mm, linear-lanceolate, narrowly acuminate towards apex, shorter than lateral sepals, 3-nerved, lateral nerves branched. Lip 12.5–13 × 4.5–5 mm, three lobed, side



**Fig.1.** *Ceratostylis radiata* J.J. Sm.: **a.** Habit; **b.** Inflorescence; **c & d.** Flower front view; **e.** Flower side view; **f.** Floral bract; **g.** Dorsal sepal dorsal view, **h.** Floral perigone with lip; **i.** Lip side view; **j.** Column with pedicel and ovary; **k.** Column close view; **l, m.** Anther front & side view; **n.** Pollinia

lobes triangular, obtuse with finely hair margins, veined; midlobe curved downwards, abruptly narrowed towards its apex. Column c.  $3.5 \times 2$  mm, short. Anther c.  $1.2 \times 1$  mm, globose, glabrous. Pollinia 8, c.  $0.7 \times 0.5$  mm, yellow.



**Fig. 2.** Type specimen of *Ceratostylis radiata* J.J. Sm.

**Flowering:** September

**Specimen examined:** INDIA: Assam, North Lakhimpur district, Kakoi Reserve Forest (Digha to Daffala),  $27^{\circ} 23' 27''$  N and  $94^{\circ} 05' 31''$  E, 140 m, 18. 09. 2011, N. Odyuo & D. K. Roy 123421 (ASSAM!). MALAYA: Kedah, Langkawi, 13.11.1921, Haniff M. & Nur G.M.G. 7103 (K!).

**Distribution:** India: (Assam), Java, Malaya, Sumatra, Thailand

**Habitat:** Flourishing in moist shady places on tree trunks near streams in Tropical climate.

## Acknowledgements

The authors are thankful to the Director, Botanical Survey of India, Kolkata and Scientist-E, Head of office, Botanical Survey of India, Eastern Regional Centre, Shillong for facilities and encouragement. We are grateful to the Director and Board of Trustees, Royal Botanic Gardens, Kew, U.K. for the kind permission to reproduce the image of the type of *Ceratostylis radiata*.

## Literature Cited

- Blume, C.L. 1825. Bijdragen tot de Flora van nederlandsch Indie.-Batavia.
- Chowdhery, H.J. 1998. Orchid Flora of Arunachal Pradesh, Dehra Dun.
- Chowdhery, H.J. 2009. Orchid Diversity in North Eastern States of India. *J. Orch. Soc. India* **23**(1&2): 19-42.
- Comber, J.B. 1990. *Orchids of Java*, Royal Botanic Garden, Kew.
- Hajra, P.K. & A. De 2011. Orchids of Assam and their *in-situ* conservation. *Phytotaxonomy* **11**: 28-36.
- Misra, S. 2007. *Orchids of India, A Glimpse*. Bishen Singh Mahendra Pal Singh. Dehra Dun.
- Pearce, N.R. & P.J. Cribb 2002. *The Orchids of Bhutan*. Vol. II, part 3. Royal Botanic Garden Edinburgh, Royal Government of Bhutan.
- Rao, A.N. 2007. Orchid flora of North East India, An up to date analysis. *Bull. Arunachal For. Res.* **23**(1&2): 6-38.
- Seidenfaden, G. 1986. Orchid Genera in Thailand XIII. Thirty-three epidendroid Genera. *Op. Bot.* **89**: 109-117.
- Singh, K.P., Phukan, S. & P. Bujarbarua 2001. Orchidaceae. In: N.P. Singh & D.K. Singh (Eds.), *Floristic Diversity and Conservation Strategies in India*. Vol. 4. Botanical Survey of India, Calcutta.

Received: 15.12.2012

Revised and Accepted: 21.05.2013